CLAIMS

What is claimed is:

1. A switch matrix for use in a keypad, said switch matrix comprising:

a support frame; and

at least one key positioning member disposed on said support frame, said at least one key positioning member comprising a first cantilever and key attaching means for removably attaching a key to said key positioning member;

wherein keys of different sizes and shapes may be attached to said switch matrix.

2. The switch matrix of claim 1 further comprising a switch activating protrusion disposed on said first cantilever.

3. The switch matrix of claim 2 wherein said switch activating protrusion is disposed on an opposite side of said first cantilever from said key attaching means.

4. The switch matrix of claim 1 further comprising a second cantilever having a fixed end and a free end.

5. The switch matrix of claim 4 wherein said first cantilever is disposed on said free end of said second cantilever.

6. The switch matrix of claim 5 wherein a free end of said first cantilever extends in a direction toward said fixed end of said second cantilever.

7. The switch matrix of claim 4 wherein said first cantilever extends parallel to said second cantilever.

8. The switch matrix of claim 4 wherein said second cantilever comprises a pair of arms, and wherein said first cantilever resides between the pair of arms of the second cantilever.

9. The switch matrix of claim 1 wherein said support frame comprises at least one longitudinal member and at least one lateral member substantially perpendicular to said longitudinal member.

10. The switch matrix of claim 9 wherein said support frame comprises two longitudinal members and four lateral members.

11. The switch matrix of claim 1 wherein said support frame comprises at least one groove for attaching said switch matrix to said keypad.

12. The switch matrix of claim 1 wherein said at least one key positioning member comprises a plurality of key positioning members disposed in a series of rows and columns.

13. The switch matrix of claim 12 wherein said series of rows and columns comprises four rows and three columns to include twelve key positioning members.

14. The switch matrix of claim 1 wherein said key attaching member comprises a knob.

15. The switch matrix of claim 14 wherein said knob is substantially diamond shaped.

16. The switch matrix of claim 1 further comprising at least one stud disposed thereon for aligning the switch matrix so that the keys register with switches.

17. The switch matrix of claim 1 further comprising at least one leg for supporting said switch matrix in said keypad.

18. The switch matrix of claim 1 further comprising at least one resilient clip for attaching said switch matrix to other components within said keypad.

19. A switch matrix for use in a keypad, said switch matrix comprising:

a plurality of key positioning members, each key positioning member comprising a first cantilever having an attached end, and a second cantilever having a fixed end and a free end, said attached end of said first cantilever disposed on said free end of said second cantilever;

wherein said key positioning members are configured to receive a key such that when said key is depressed, said first cantilever is adapted to deflect to activate a switch.

20. The switch matrix of claim 19 further comprising a switch activating protrusion disposed on said first cantilever.

21. The switch matrix of claim 19 further comprising key attaching means for removably attaching said key to said plurality of key positioning members.

22. The switch matrix of claim 19 wherein a free end of said first cantilever extends in a direction toward said fixed end of said second cantilever.

23. The switch matrix of claim 19 wherein said first cantilever extends parallel to said second cantilever.

24. The switch matrix of claim 19 wherein said second cantilever comprises a pair of arms, and said first cantilever resides between said pair of arms of said second cantilever.

25. The switch matrix of claim 19 further comprising a support frame for supporting said plurality of key positioning members.

26. The switch matrix of claim 25 wherein said support frame comprises at least one longitudinal member and at least one lateral member substantially perpendicular to said longitudinal member.

27. The switch matrix of claim 26 wherein said support frame comprises two longitudinal members and four lateral members.

28. The switch matrix of claim 25 wherein said support frame comprises at least one groove for attaching said switch matrix to said keypad.

29. The switch matrix of claim 19 wherein said plurality of key positioning members are disposed in a series of rows and columns.

30. The switch matrix of claim 21 wherein said key attaching means comprises a knob.

31. The switch matrix of claim 30 wherein said knob is substantially diamond shaped.

32. The switch matrix of claim 19 further comprising at least one stud disposed thereon for aligning the switch matrix so that the keys register with switches.

33. The switch matrix of claim 19 further comprising at least one leg for supporting said switch matrix in said keypad.

34. The switch matrix of claim 19 further comprising at least one resilient clip for attaching said switch matrix to other components within said keypad.

35. A switch matrix for use in a keypad, said switch matrix comprising:

a plurality of key positioning members, each of said plurality of key positioning members comprising a knob; and

at least one key having an opening defined by a sidewall, said opening configured to receive said knob to removably attach said at least one key to said knob with a friction fit;

wherein said at least one key may be attached to any of said plurality of key positioning members such that a configuration of said at least one key on said keypad may be varied.

36. The switch matrix of claim 35 wherein said at least one key further comprises a light pipe to direct light from a lower surface of said at least one key to an upper surface of said at least one key.

37. The switch matrix of claim 36 wherein said light pipe is attached to said key by interfitting parts such that no adhesive or fasteners are required.

38. The switch matrix of claim 35 wherein said plurality of key positioning members each comprise a first cantilever adapted to deflect to contact a switch.

39. The switch matrix of claim 38 wherein said first cantilever comprises an attached end, said attached end of said first cantilever being attached to a free end of a second cantilever.

40. The switch matrix of claim 39 wherein said second cantilever comprises a pair of arms, and said first cantilever resides between said pair of arms of said second cantilever.

41. The switch matrix of claim 35 further comprising a support frame for supporting said plurality of key positioning members.

42. The switch matrix of claim 41 wherein said support frame comprises at least one longitudinal member and at least one lateral member substantially perpendicular to said longitudinal member.

43. The switch matrix of claim 41 wherein said support frame comprises at least one groove for receiving a tab to attach said switch matrix to said keypad.

44. The switch matrix of claim 35 wherein said plurality of key positioning members are disposed in a series of rows and columns.

45. The switch matrix of claim 35 wherein said knob is substantially diamond shaped.

46. A method of attaching one or more keys to a keypad comprising the steps of:

(a) providing a switch matrix having a plurality locations where said one or more keys may be attached;

(b) attaching said switch matrix to said keypad;

(c) providing said one or more keys of a first size and shape;

(d) selecting one or more of said plurality of locations on said switch matrix to attach said one or more keys; and

(e) pressing said one or more keys on said one or more of said selected plurality of locations to attach said one or more keys to said keypad.

47. The method of claim 46 further comprising covering said switch matrix with a face plate.

48. The method of claim 46 wherein step (e) further comprises joining a knob on said one or more of said selected plurality of locations with an opening on said one or more keys to fasten said one or more keys to said keypad with a friction fit.

49. The method of claim 46 further comprising removing said one or more keys from said keypad by pulling on said one or more keys.

50. The method of claim 49 further comprising providing one or more keys of a second size and shape different from said first size and shape, and pressing said one or more keys of said second size and shape on said one or more of said selected plurality of locations to attach said one or more keys of said second size and shape to said keypad.

51. The method of claim 49 further comprising selecting another one or more of said plurality of locations and pressing said one or more keys on said another one or more of said plurality of locations to attach said one or more keys to said keypad.

52. A method for attaching keys of different sizes and shapes to a keypad, said method comprising:

(a) providing a switch matrix having a plurality of attaching means for removably attaching said keys;

(b) providing said keys having corresponding attaching means independent of the size and shape of said keys;

(c) selecting a configuration of said keys to be attached on said keypad;

(d) selecting said attaching means corresponding to the configuration of said keys to be attached on said keypad; and

(e) joining said corresponding attaching means to said selected attaching means to thereby attach said keys to said keypad.

53. A switch matrix for use in a keypad, said switch matrix comprising:

a grid of key attaching means for removably attaching keys of different sizes to said switch matrix;

wherein said keys may be selectively attached to said key attaching means to form different key configurations.